

CLAIMS

1. A vehicle comprising:

a frame including at least one structural frame member; and

5 a metal bumper mounted with respect to said at least one structural frame member for receiving a load in the event of an impact to a portion of the vehicle periphery;

10 wherein at least a portion of the bumper is characterized by a curvature that is the result of exposure to fluid pressure.

2. The vehicle of claim 1, further comprising a body panel forming a first portion of the vehicle exterior surface; wherein the bumper forms a second portion of the vehicle exterior surface; and wherein the first portion and the second portion are substantially contiguous.

3. The vehicle of claim 1, further comprising a fascia forming a portion of the exterior surface of the vehicle and wherein the portion of the exterior surface of the vehicle has a shape substantially identical to the curvature.

4. The vehicle of claim 1, wherein said at least one structural frame member includes two lower rails and two upper rails, and wherein the bumper is operatively connected to the two lower rails and the two upper rails such that an impact load received by the bumper in the event of a vehicle impact is at least partially
5 distributed to the two lower rails and the two upper rails.

5. The vehicle of claim 4, wherein the bumper includes an inner panel and an outer panel operatively connected to the inner panel.

6. The vehicle of claim 5, wherein the bumper includes an upper bumper bar portion, a lower bumper bar portion, and a portion interconnecting the upper bumper bar portion and the lower bumper bar portion.

7. The vehicle of claim 6, wherein the inner panel and the outer panel each at least partially define the upper bumper bar portion, the lower bumper bar portion, and the portion interconnecting the upper bumper bar portion and the lower bumper bar portion.

8. The vehicle of claim 1, wherein the bumper includes an inner panel and an outer panel operatively connected to the inner panel such that the inner panel and the outer panel define a cavity therebetween.

9. The vehicle of claim 8, wherein the inner panel is characterized by strengthening formations.

10. The vehicle of claim 9, wherein the inner panel or the outer panel is formed using a process selected from the group consisting of quick plastic forming, superplastic forming and sheet hydroforming.

11. The vehicle of claim 1, wherein the bumper includes an integral tab defining a hole for the attachment of vehicle hardware.

12. A vehicle bumper comprising: a metal vehicle bumper surface characterized by a curvature formed using fluid pressure.

13. The vehicle bumper of claim 12, further comprising an inner panel and an outer panel operatively connected to the inner panel, the outer panel defining the surface.

14. The vehicle bumper of claim 13, wherein the bumper includes an upper bumper bar portion, a lower bumper bar portion, and a portion interconnecting the upper bumper bar portion and the lower bumper bar portion.

15. The vehicle bumper of claim 13, wherein the inner panel is characterized by strengthening formations.

16. The vehicle bumper of claim 12, wherein the bumper is adapted to mount to a pair of upper rails and a pair of lower rails.

17. A method of manufacturing a vehicle bumper, the method comprising: subjecting a metal blank to fluid pressure to form a bumper having a shape characterized by a curvature.

18. The method of claim 17, wherein said subjecting a metal blank to fluid pressure includes superplastically deforming the metal blank.

19. The method of claim 17, wherein said subjecting a metal blank to fluid pressure includes deforming the metal blank using quick plastic forming.

20. The method of claim 17, wherein said subjecting a metal blank to fluid pressure includes sheet hydroforming the metal blank.

21. A vehicle comprising:

two upper rails and two lower rails; and

5 a metal bumper mounted with respect to the two upper rails and the two lower rails for receiving a load in the event of an impact to the periphery of the vehicle,

the bumper having an outer panel and an inner panel operatively connected to the outer panel and at least partially corrugated;

- 10 wherein the inner panel and the outer panel are characterized by a curvature that is the result of exposure to fluid pressure.